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Homomorphic Factorization of BRDF-based Lighting Computation - Latta, Kolb (2002) (Correct) (3 citations)
as a generalized approach to several **environment map** prefiltering techniques. Existing
elevation. This technique stores the diffuse and **specular** terms in separate **textures**. Additionally a
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Vol. 7, No. 4:3-8 - Simple Blurry Reflections (Correct)
7, No. 4:3-8 Simple Blurry Reflections with **Environment Maps** Michael Ashikhmin and Abhijeet Ghosh SUNY
capabilities to approximate the effect of blurry **specular** reflections and indirect diffuse illumination.
reflection behavior using the bidirectional **reflectance** distribution function (BRDF)They then use
www.cs.sunysb.edu/~ash/blurry.pdf

Realistic Materials and Lighting in Real-Time Rendering - Latta (2001) (Correct)
parabolic, right: cube map) 49 ure 12: **Environment maps** (Loch, Desert, painted light sources)
55 ure 15: Result of glossy **environment map** with **specular** Phong model .55 ure 16:
9 2.3 Bidirectional **Reflectance** Distribution Function (BRDF)
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1 Level-of-detail volume rendering via 3D textures   ▬
Manfred Weiler, Rüdiger Westermann, Chuck Hansen, Kurt Zimmermann, Thomas Ertl
October 2000 **Proceedings of the 2000 IEEE symposium on Volume visualization**

Full text available: 📄 pdf(1.04 MB)   Additional Information: full citation, references, citings, index terms

2 Session 7: rendering: Detail synthesis for image-based texturing   ▬
Ryan M. Ismert, Kavita Bala, Donald P. Greenberg
April 2003 **Proceedings of the 2003 symposium on Interactive 3D graphics**

Full text available: 📄 pdf(3.31 MB)   Additional Information: full citation, abstract, references, index terms

Image-based modeling techniques permit the creation of visually interesting geometric
models from photographs. But traditional image-based texturing (IBT) techniques often
result in extracted textures of poor, uneven quality. This paper introduces a novel technique
to improve the quality of image-based textures. We compute a simple and efficient texture
quality metric based on the Jacobian of the imaging transform. We identify the correlation
between the values of the Jacobian metric and the lev ...

Keywords: image-based modeling, texture mapping

3 Shading, surfaces, and collision detection: Automatic shader level of detail   ▬
Marc Olano, Bob Kuehne, Maryann Simmons
July 2003 **Proceedings of the ACM SIGGRAPH/EUROGRAPHICS conference on Graphics hardware**

Full text available: 📄 pdf(2.69 MB)   Additional Information: full citation, abstract, references, index terms

Current graphics hardware can render procedurally shaded objects in real-time. However,
due to resource and performance limitations, interactive shaders can not yet approach the
complexity of shaders written for film production and software rendering, which may stretch
to thousands of lines. These constraints limit not only the complexity of a single shader, but
also the number of shaded objects that can be rendered at interactive rates. This problem
has many similarities to the rendering of lar ...

Keywords: computer games, hardware systems, interactive rendering, languages, level of
detail, multi-pass rendering, procedural shading, reflectance & shading models, rendering
systems, simplification

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1 Shading and shaders: Efficient rendering of spatial bi-directional reflectance ◼
distribution functions
David K. McAllister, Anselmo Lastra, Wolfgang Heidrich
September 2002 **Proceedings of the ACM SIGGRAPH/EUROGRAPHICS conference on
Graphics hardware**

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terms

We propose texture maps that contain at each texel all the parameters of a Lafortune
representation BRDF as a compact, but quite general surface appearance representation.
We describe a method for rendering such surfaces rapidly on current graphics hardware and
demonstrate the method with real, measured surfaces and hand-painted surfaces.We also
propose a method of rendering such spatial bi-directional reflectance distribution functions
using prefiltered environment maps. Only one set of maps is ...

Keywords: graphics hardware, reflectance & shading models, rendering hardware, texture
mapping
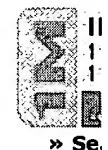
2 Frequency space environment map rendering ◼
Ravi Ramamoorthi, Pat Hanrahan
July 2002 **ACM Transactions on Graphics (TOG) , Proceedings of the 29th annual
conference on Computer graphics and interactive techniques**, Volume 21 Issue 3

Full text available: 📄 pdf(3.37 MB)   Additional Information: full citation, abstract, references, citings, index
terms

We present a new method for real-time rendering of objects with complex isotropic BRDFs
under distant natural illumination, as specified by an environment map. Our approach is
based on spherical frequency space analysis and includes three main contributions. Firstly,
we are able to theoretically analyze required sampling rates and resolutions, which have
traditionally been determined in an ad-hoc manner. We also introduce a new compact
representation, which we call a *spherical harmonic reflec* ...

Keywords: *complexity analysis, environment maps, image-based rendering, signal-
processing, spherical harmonics*

3 Image-based reconstruction of spatial appearance and geometric detail

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1 **Recovery of 3-D shape using hybrid reflectance model**
Eunjin Jung; Il Dong Yun; Sang Uk Lee;
Image Processing, 1994. Proceedings. ICIP-94., IEEE International
Conference , Volume: 2 , 13-16 Nov. 1994
Pages:120 - 124 vol.2

[Abstract]   [PDF Full-Text (284 KB)]   **IEEE CNF**

2 **A probabilistic framework for specular shape-from-shading**
Ragheb, H.; Hancock, E.R.;
Pattern Recognition, 2002. Proceedings. 16th International Conference
on , Volume: 3 , 11-15 Aug. 2002
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[Abstract]   [PDF Full-Text (337 KB)]   **IEEE CNF**

3 **Shape from shading for non-Lambertian surfaces from one color ima**
Ying-li Tian; Tsui, H.T.;
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[Abstract]   [PDF Full-Text (376 KB)]   **IEEE CNF**

4 **Estimating the surface radiance function from single images**
Robles-Kelly, A.; Hancock, E.R.;
3D Data Processing, Visualization and Transmission, 2004. 3DPVT 2004.
Proceedings. 2nd International Symposium on , 6-9 Sept. 2004
Pages:494 - 501

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